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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

**Office Action Summary**

Application No.

09/537,906

Applicant(s)

CAFFREY ET AL.

Examiner

Shun Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 08 May 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 28 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because:
  - (a) in Fig. 7B, "110" should probably be --162-- (see pg. 31, line 23); and
  - (b) in Fig. 8A, "XMAX = X(P)" in step 126 should probably be --XMAX = X(N + OFFSET)-- (see pg. 30, lines 21-26).

Correction is required.

### *Specification*

2. The disclosure is objected to because of the following informalities:
  - (a) in line 10, pg. 26, "7790.16 keV" should probably be --7790.10 keV--; and
  - (b) in line 10, pg. 46, "Aat" should probably be --At--.

Appropriate correction is required.
3. The use of the trademark GMX (pg. 13, line 10) and Nomad Plus (pg. 13, line 18) has been noted in this application. It should be capitalized (e.g., NOMAD PLUS) wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

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***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 recites the limitation "said apparatus" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recite the limitation "emitted by said detector" in lines 5-6 which fails to particularly point out and distinctly claim the subject matter ("emitted by said detector" should probably be --emitted by said chemical compound as a result of exposure to said neutrons--).

Claim 10 recites the limitation "said spectrum" in line 32. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Vourvopoulos (US 5,982,838).

In regard to claim 1, Vourvopoulos discloses a method for identifying a chemical compound, the method comprising:

exposing said chemical compound to neutrons from a neutron source;

- (a) detecting gamma rays emitted by said chemical compound as a result of exposure to said neutrons (column 3, lines 28-31);
- (b) creating a spectrum comprising an energy scale and a detection count, said energy scale corresponding to the energies of said gamma rays and said detection count corresponding to the number of detected gamma rays (column 4, lines 6-20; Figs. 2-5);
- (c) calibrating said energy scale of said spectrum (Figs. 2-6; column 7, lines 32-64);
- (d) performing an analysis on said spectrum to determine the presence of at least one chemical element within said chemical compound (column 7, lines 32-37); and
- (e) identifying said chemical compound based on said analysis of said spectrum (column 8, lines 19-22).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vourvopoulos (US 5,982,838) in view of Scott (US 3,739,171).

In regard to claim 10 in so far as understood, Vourvopoulos discloses an system for identifying a chemical compound comprising:

- (a) a neutron source (23) for delivering neutrons into said chemical compound;
- (b) a gamma-ray detector (21) for detecting gamma rays emitted by said chemical compound as a result of exposure to said neutrons;
- (c) a computer (30) operatively associated with said gamma-ray detector (21); and
- (d) computer code (column 5, lines 28-38 and 64-67) residing within computer (a computer-readable medium is inherently operatively associated with said computer for containing the computer code instructions) for controlling said computer (30) to identify said chemical compound by:

storing first data (*i.e.*, response spectrum; Figs. 2-4) representative of gamma-ray peak energies corresponding to at least one pre-selected chemical element (column 6, line 59 to column 7, line 13) and said first data in a pre-selected order (*i.e.*, sorted) having a first peak energy and a last peak energy (column 6, lines 8-15) ;

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receiving second data representative of gamma-ray counts, wherein said gamma rays are generated by said chemical compound (*i.e.*, experimental spectrum; see Fig. 6), and said second data has peaks associated therewith, and said second data in a pre-selected order (*i.e.*, sorted) having a first peak and a last peak (column 7, lines 32-40);

comparing said energies from said first data to said peaks from said second data by comparing said first peak energy through said last peak energy from said first data to said first peak through said last peak from said second data (Fig. 6; column 7, lines 32-37);

performing an analysis of said peaks from said second data versus said energies from said first data (Figs. 2-5; column 7, lines 32-64);

evaluating spectrum based on said analysis to determine at least one chemical element within said chemical compound (column 7, lines 32-37); and

identifying said chemical compound based on said evaluating of said spectrum (column 8, lines 19-22).

The system of Vourvopoulos lacks that said analysis is a least squares fit. Scott teaches (column 4, lines 32-37; column 11, line 43 to column 12, line 37) that an analysis using a least squares fit provides elimination of instrument error to insure a more accurate fit. Therefore it would have been obvious to one having ordinary skill in the art to use a least squares fit in the system of Vourvopoulos, in order to eliminate of instrument error so as to insure a more accurate fit as taught by Scott.

In regard to claims 11 and 12 which are dependent on claim 10 in so far as understood, Vourvopoulos also discloses that said at least one pre-selected chemical element is chlorine (column 6, lines 8-24 and 59 to column 7, line 13) and that the gamma ray energies (e.g., a Cl peak at about 5600 keV; see Fig. 3) produced from an element can be measured to provide a characteristics gamma ray spectrum which is called a response spectrum (column 6, lines 8-24). The system of Vourvopoulos lacks an explicit description of all the gamma ray energies from chlorine. Therefore it would have been obvious to one having ordinary skill in the art that the energies (e.g., 5,088.88, 5,715.26, 7,413.80, and 7,790.10 keV) from the first data in the system of Vourvopoulos comprises of values measured using a pre-selected chemical element (e.g., chlorine).

In regard to claims 13 and 14 which are dependent on claim 10 in so far as understood, Vourvopoulos also discloses that said at least one pre-selected chemical element is iron (column 6, lines 8-24 and 59 to column 7, line 13) and that the gamma ray energies (e.g., a Fe peak at about 7130 keV; see Fig. 3) produced from an element can be measured to provide a characteristics gamma ray spectrum which is called a response spectrum (column 6, lines 8-24). The system of Vourvopoulos lacks an explicit description of all the gamma ray energies from iron. Therefore it would have been obvious to one having ordinary skill in the art that the energies (e.g., 7120.13, 7134.45, 7631.13, and 7645.45 keV) from the first data in the system of Vourvopoulos comprises of values measured using a pre-selected chemical element (e.g., iron).



In regard to claim 15 which is dependent on claim 10 in so far as understood, Vourvopoulos also discloses determining whether any of said peak energies from said first data match said peaks from said second data (*i.e.*, identification chemical elements recognized and recorded; column 7, lines 29-37). Vourvopoulos further discloses that to obtain response function for all elements that are expected to be detected (column 6, lines 63-65). Thus inherent in the teachings of Vourvopoulos are comparing said peak energies from said first data to additional peak energies from an additional data source (*i.e.*, another response function or spectrum corresponding to another element) if said energies levels from said first data do not match said peaks from said second data in order that the elements present are recorded (column 7, lines 29-34).

In regard to claims 2-9, the method steps are implicit <sup>from modified</sup> ~~for~~ the system of Vourvopoulos since the structure is the same as the applicant's apparatus of claims 10-15.

### **Conclusion**

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (703) 308-4860. The examiner can normally be reached on Tuesday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seungsook Ham can be reached on (703) 308-4090. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SL

October 15, 2001

  
SEUNGSOOK HAM  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800